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QuickScore - Projected Hazard Ranking System (HRS) Scoring

HARDESTY FEDERAL COMPLEX
601-607 HARDESTY AVENUE
KANSAS CITY, JACKSON COUNTY, MISSOURI

Terracon Project No. 02027042
November 4, 2002

Prepared for:

UNITED STATES GENERAL SERVICES ADMINISTRATION
Kansas City, Missouri

Prepared by:

ⅡErracon
Lenexa, Kansas

November 4, 2002

United States General Services Administration
1500 East Bannister Road
Kansas City, Missouri 64131-3088

Attn: Mr. Dave L. Hartshorn (6PMF)

Re: QuickScore - Projected Hazard Ranking System (HRS) Scoring
Hardesty Federal Complex
601-607 Hardesty Avenue
Kansas City, Jackson County, Missouri 64116
EPA Region 7
EPA ID No. MON000703320
GSA Order No. GS-06P-02-GXM-0004
Terracon Project No. 02027042

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Dear Mr. Hartshorn:

Terracon has prepared a QuickScore, a Projected Hazard Ranking System (HRS) Scoring, for the above-referenced site based on information provided in the Preliminary Assessment (PA) report, dated November 4, 2002, and in the Site Inspection (SI) report, dated November 4, 2002. The scoring of the site was completed using an Environmental Protection Agency (EPA) software, "HRS QuickScore", Version 1.1. "Federal Register / Vol. 55, No. 241. / Friday, December 14, 1990 / Rules and Regulations, Appendix A to Part 300 – The Hazard Ranking System" was followed to properly enter site-specific data into HRS QuickScore.

We appreciate the opportunity to be of service to you on this project and look forward to working with you in the future. If there are questions concerning the report, or if we may be of further assistance, please call.

Sincerely,
1Ierracon

Tracie A. Ragland   David E. Koch
Environmental Scientist   Principal

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601-607 HARDESTY AVENUE
KANSAS CITY, JACKSON COUNTY, MISSOURI

Terracon Project No. 02027042
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1.   INTRODUCTION

Terracon has prepared a QuickScore, a Projected Hazard Ranking System (HRS) Scoring, for the above-referenced site based on information provided in the Preliminary Assessment (PA) report, dated November 4, 2002, and in the Site Inspection (SI) report, dated November 4, 2002. The scoring of the site was completed using an Environmental Protection Agency (EPA) software, "HRS QuickScore", Version 1.1. "Federal Register / Vol. 55, No. 241. / Friday, December 14, 1990 / Rules and Regulations, Appendix A to Part 300 – The Hazard Ranking System" (Federal Register) was followed to properly enter site-specific data into HRS QuickScore. The summary HRS QuickScore scoresheets are provided in Appendix A.

Terracon completed a PA and SI following the general requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) for the above-referenced site. The PA was based on a visual survey of the subject site on November 28, 2001, a reconnaissance of adjoining properties, interviews with individuals knowledgeable about the subject site, a regulatory records review, and a review of site use history.

1.1   HRS Overview

The HRS score is the result of an evaluation of four pathways:

- Groundwater Migration (gw)
- Surface Water Migration (sw)
- Soil Exposure (s)
- Air Migration (a)

The groundwater and air migration pathways use single threat evaluations, while the surface water migration and soil exposure pathways use multiple threat evaluations.

A score is generated for each pathway and then combined for a site-specific HRS score using the following root-mean-square equation.

Site = $[(gw^2 + sw^2 + s^2 + a^2)/4]^{1/2}$

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1.2   Sources of Concern

Based on information obtained, reviewed, and detailed in the PA and SI reports, dated November 4, 2002, the following potential sources of concern represented a *potential* threat to human health and the environment. These source areas do not include the petroleum underground storage tanks (USTs), which are excluded under CERCLA.

Location	Source	Likelihood of Release	Pathway	Sampled as Part of SI	HRS Observed Release
Building 3	Smokestack ash	No	-----	Yes, to determine waste characteristics	-----
Building 5	Paint house	No	-----	No	-----
Building 6, former Building 14, and grass covered area	Use of "Impregnate I" and clothing renovation activities, former chemical tanks/pits	Yes	Groundwater & soil	Yes	Yes, VOCs in soil and Groundwater
Building 6	Painting activities	Yes	Groundwater & soil	Yes, sampled for VOCs	No, VOCs detected not indicative of paint related materials
Building 6	Circuit board manufacturing	Yes	Groundwater & soil	Yes, sampled for RCRA Metals	-----
Buildings 9, 10, and 11	Former creek dump	Yes	Groundwater & soil	Yes, background sample collected in vicinity of Building 10 and samples collected in vicinity of Building 9	-----
Building 9	Indoor firing range	No	-----	Yes, to determine waste characteristics	-----
Building 11	Film processing	No	-----	No	-----
Building 11	Production of newspaper	No	-----	No	-----
Open storage area	Insecticide storage	Yes	Soil	No, PA information was not obtained until after SI activities were completed	Potential of Release
Site Wide	Asbestos containing Building Materials	No	Air	No	-----
Building 13 / Site wide	Transformers	No	-----	No	-----

RCRA = Resource Conservation and Recovery Act

VOCs = volatile organic compounds

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2.   GROUNDWATER PATHWAY

Evaluation of the groundwater migration pathway was based on three factor categories: likelihood of release, waste characteristics, and targets.

The source used for the groundwater pathway is the VOCs detected in groundwater related to Building 6 activities. During the SI activities, five VOCs (PCA, PCE, TCA, TCE, and cis-DCE)* were detected in groundwater at the site at concentrations above the Missouri Department of Natural Resources (MDNR) Groundwater Target Concentrations (GTARC).

*PCA	1,1,2,2 tetrachloroethane
PCE	tetrachloroethene
TCA	1,1,2 trichloroethane
TCE	trichloroethene
cis-DCE	cis-dichloroethene

When the above compounds were evaluated for human toxicity, TCA was determined to be the more toxic of the five compounds. The human toxicity factors were found in the superfund chemical data matrix (SCDM) database provided in the HRS Superscreen EPA software. Therefore, TCA and its waste characteristics were used in the groundwater pathway. The aquifer in which TCA was detected is representative of the upper aquifer in the area, although not a potable water source.

2.1   Groundwater Pathway Score

Groundwater Pathway Score = 0.0

When calculating the score for the groundwater pathway, numbers generated for the following three categories are multiplied together: likelihood of release, waste characteristics, and targets. When data was entered for the groundwater targets, no targets were identified based on section 3.3 of the Federal Register. This included the nearest well, population, resources, and well head protection areas. The resulting pathway score was zero.

3.   SURFACE WATER PATHWAY

Evaluation of the surface water migration pathway is based on two migration components: Overland/flood migration to surface water and Groundwater to surface water migration. Either one or both of these components maybe scored as part of the surface water pathway. As for the surface water pathway for this site, only the groundwater to surface water migration component was scored. Because the site is 85% percent covered with asphalt and concrete, with the remainder primarily covered with dense grass, and because no sources are present, the overland/flood migration component was not scored.

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This site is eligible to score under the groundwater to surface water component because it meets the following criteria:

- The Blue River is present within 1-mile of the subject site,
- The aquifer is not known to be discontinuous, and
- The uppermost aquifer is above the bottom of the nearest surface water body, the Blue River.

As described in Section 2.0 of this report, TCA is the most toxic substance detected in the groundwater at the site. Therefore, TCA and its waste characteristics were used in the groundwater to surface water migration pathway.

3.1   Surface Water Pathway Score

Surface Water Pathway Score = 3.47

Section 4.2 of the Federal Register was followed when calculating and entering data into HRS QuickScore for this pathway. In determining this score, three types of threats were evaluated: drinking water threat, human food chain threat, and environmental threat.

4.   SOIL EXPOSURE PATHWAY

Evaluation of the soil exposure pathway was based on two threats: residential population threat, and nearby population threat. Evaluation of both threats was based on three factor categories: likelihood of exposure, waste characteristics, and targets.

As described in Section 2.0 of this report, TCA is the most toxic substance detected in the groundwater at the site. Therefore, TCA and its waste characteristics were used in the soil exposure pathway.

In determining target populations, the current site scenario was used. The site is currently fenced with limited public access and few workers are present at the site.

4.1   Soil Exposure Pathway Score

Soil Exposure Pathway Score = 3.02

Section 5.0 of the Federal Register was followed when calculating and entering data into HRS QuickScore for this pathway. As well as having limited impacted soil for exposure, there are limited target populations present for this site, including limited human population, workers, resources, or terrestrial sensitive environments.

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5. AIR PATHWAY

Evaluation of the air migration pathway was based on three factor categories: likelihood of exposure, waste characteristics, and targets. Two possible releases are possible as part of the air migration pathway. These include gas releases and particulate releases.

There are no gas emission sources at the site; however, asbestos is present in building materials found in the existing structures. Although, release of asbestos from this source is not likely, it was evaluated as a conservative approach to the scoring process. Because the site is 85% percent covered with asphalt and concrete with the remainder primarily covered with dense grass and because no sources are present, no other particulate sources were scored.

5.1 Air Pathway Score

Air Pathway Score = 0.13

Section 6.0 of the Federal Register was followed when calculating and entering data into HRS QuickScore for this pathway. Because there is a small potential for a release as well as a small waste quantity present, a relatively low air pathway score resulted.

6. CONCLUSION

Once a score for the four pathways was determined, each pathway score was used to determine the site score using the equation presented in section 1.1 of this report.

An overall site score of **2.3** was generated.

A range of scores from 0 to 100 could be generated during the HRS process. Therefore, this score appears to indicate that the subject site represents a relatively low risk to human health and the environment.

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APPENDIX A

HRS QUICKSCORE SCORESHEETS

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Site Name: Hardesty Federal Complex

Region: 7

City, County, State: Kansas City, Jackson MO

Evaluator:

EPA ID#: MON000703320

Date: 11/5/2002

Lat/Long: 39 06 13.01 N & 94 31 05.41 W

T/R/S:

Congressional District:

This Scoresheet is for: Combined PA/SI

Scenario Name: PA/SI - Preliminary Scoring

Description: The Hardesty Federal Complex is located at 601-607 Hardesty Avenue in a residential/ commercial area of Kansas City, Jackson County, Missouri, in the central portion of Kansas City. The geographic coordinates are 39o 06' 13.01" N latitude and 94o 31' 05.41" W longitude. The total area of the Hardesty Federal Complex is approximately 18 acres. The Hardesty Federal Complex property is located on relatively flat terrain that slopes gently toward the southeast property boundary.

	S pathway	S^2 pathway
Ground Water Migration Pathway Score (S_{gw})	0	0
Surface Water Migration Pathway Score (S_{sw})	3.47 0	12.0409
Soil Exposure Pathway Score (S_s)	3.02	9.1204
Air Migration Score (S_a)	0.134472727272727	0.01808291438016
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		21.1793829143802
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		5.29484572859505
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4}$		2.3

υ Pathways not assigned a score (explain):

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: Groundwater Pathway with TCA		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	550
2. Potential to Release:		
2a. Containment	10	
2b. Net Precipitation	10	
2c. Depth to Aquifer	5	
2d. Travel Time	35	
2e. Potential to Release [lines 2a(2b + 2c + 2d)]	500	
3. Likelihood of Release (higher of lines 1 and 2e)	550	550
Waste Characteristics:		
4. Toxicity/Mobility	(a)	1000
5. Hazardous Waste Quantity	(a)	1
6. Waste Characteristics	100	6
Targets:		
7. Nearest Well	(b)	0
8. Population:		
8a. Level I Concentrations	(b)	0
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(b)	0
8d. Population (lines 8a + 8b + 8c)	(b)	0
9. Resources	5	0
10. Wellhead Protection Area	20	0
11. Targets (lines 7 + 8d + 9 + 10)	(b)	0
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000][c]	100	0
Ground Water Migration Pathway Score:		
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100	0

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

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TABLE 4-1 --SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET		
Factor categories and factors	Maximum Value	Value Assigned
Watershed Evaluated: No scenario for Overland Flow		
Drinking Water Threat		
Likelihood of Release:		
1. Observed Release	550	0
2. Potential to Release by Overland Flow:		
2a. Containment	10	
2b. Runoff	10	
2c. Distance to Surface Water	5	
2d. Potential to Release by Overland Flow [lines 2a(2b + 2c)]	35	0
3.Potential to Release by Flood:		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	0
5. Likelihood of Release (higher of lines 1 and 4)	550	0
Waste Characteristics:		
6. Toxicity/Persistence	(a)	
7. Hazardous Waste Quantity	(a)	
8. Waste Characteristics	100	0
Targets:		
9. Nearest Intake	50	
10. Population:		
10a. Level I Concentrations	(b)	
10b. Level II Concentrations	(b)	
10c. Potential Contamination	(b)	
10d. Population (lines 10a + 10b + 10c)	(b)	
11. Resources	5	
12. Targets (lines 9 + 10d + 11)	(b)	
Drinking Water Threat Score:		
13. Drinking Water Threat Score [(lines 5x8x12)/82,500, subject to a max of 100]	100	0
Human Food Chain Threat		
Likelihood of Release:		
14. Likelihood of Release (same value as line 5)	550	0
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation	(a)	
16. Hazardous Waste Quantity	(a)	0
17. Waste Characteristics	1000	0
Targets:		
18. Food Chain Individual	50	
19. Population		
19a. Level I Concentration	(b)	
19b. Level II Concentration	(b)	
19c. Potential Human Food Chain Contamination	(b)	
19d. Population (lines 19a + 19b + 19c)	(b)	
20. Targets (lines 18 + 19d)	(b)	
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score [(lines 14x17x20)/82500, subject to max of 100]	100	0
Environmental Threat		
Likelihood of Release:		
22. Likelihood of Release (same value as line 5)	550	0
Waste Characteristics:		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	
24. Hazardous Waste Quantity	(a)	0
25. Waste Characteristics	1000	0

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Targets:

    26. Sensitive Environments

        26a. Level I Concentrations   (b)

        26b. Level II Concentrations   (b)

        26c. Potential Contamination   (b)

        26d. Sensitive Environments (lines 26a + 26b + 26c)   (b)

    27. Targets (value from line 26d)   (b)

Environmental Threat Score:

28. Environmental Threat Score [(lines 22x25x27)/82,500 subject to a max of 60]	60	0
Surface Water Overland/Flood Migration Component Score for a Watershed		
29. Watershed Score[c] (lines 13+21+28, subject to a max of 100}	100	0
Surface Water Overland/Flood Migration Component Score		
30. Component Score (S_{sw})[c] (highest score from line 29 for all watersheds evaluated)	100	0

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

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TABLE 4-25 --GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: GW to SW with TCA		
Drinking Water Threat		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	550
2. Potential to Release:		
2a. Containment	10	
2b. Net Precipitation	10	
2c. Depth to Aquifer	5	
2d. Travel Time	35	
2e. Potential to Release [lines 2a(2b + 2c + 2d)]	500	
3. Likelihood of Release (higher of lines 1 and 2e)	550	550
Waste Characteristics:		
4. Toxicity/Mobility	(a)	400
5. Hazardous Waste Quantity	(a)	1
6. Waste Characteristics	100	3
Targets:		
7. Nearest Well	(b)	0.1
8. Population:		
8a. Level I Concentrations	(b)	0
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(b)	1.6
8d. Population (lines 8a + 8b + 8c)	(b)	1.6
9. Resources	5	5
10. Targets (lines 7 + 8d + 9)	(b)	6.7
Drinking Water Threat Score:		
11. Drinking Water Threat Score ([lines 3 x 6 x 10]/82,500, subject to max of 100)	100	0.13
Human Food Chain Threat		
Likelihood of Release:		
12. Likelihood of Release (same value as line 3)	550	550
Waste Characteristics:		
13. Toxicity/Mobility/Persistence/Bioaccumulation	(a)	20000
14. Hazardous Waste Quantity	(a)	1
15. Waste Characteristics	1000	10
Targets:		
16. Food Chain Individual	50	0
17. Population		
17a. Level I Concentration	(b)	0
17b. Level II Concentration	(b)	0
17c. Potential Human Food Chain Contamination	(b)	0
17d. Population (lines 17a + 17b + 17c)	(b)	0
18. Targets (lines 16 + 17d)	(b)	0
Human Food Chain Threat Score:		
19. Human Food Chain Threat Score [(lines 12x15x18)/82,500,suject to max of 100]	100	0
Environmental Threat		
Likelihood of Release:		
20. Likelihood of Release (same value as line 3)	550	550
Waste Characteristics:		
21. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	20000
22. Hazardous Waste Quantity	(a)	1
23. Waste Characteristics	1000	10
Targets:		
24. Sensitive Environments		
24a. Level I Concentrations	(b)	0
24b. Level II Concentrations	(b)	0
24c. Potential Contamination	(b)	50

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24d. Sensitive Environments (lines 24a + 24b + 24c)	(b)	50
25. Targets (value from line 24d)	(b)	50
Environmental Threat Score:		
26. Environmental Threat Score [(lines 20x23x25)/82,500 subject to a max of 60]	60	3.34
Ground Water to Surface Water Migration Component Score for a Watershed		
27. Watershed Score[c] (lines 11 + 19 + 28, subject to a max of 100)	100	3.47
28. Component Score (S_{gs})[c] (highest score from line 27 for all watersheds evaluated, subject to a max of 100)	100	3.47

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

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TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value		Value Assigned
Likelihood of Exposure:			
1. Likelihood of Exposure	550		550
Waste Characteristics:			
2. Toxicity	(a)	1000	
3. Hazardous Waste Quantity	(a)	1	
4. Waste Characteristics	100		6
Targets:			
5. Resident Individual	50	45	
6. Resident Population:			
6a. Level I Concentrations	(b)	0	
6b. Level II Concentrations	(b)	0	
6c. Population (lines 6a + 6b)	(b)	0	
7. Workers	15	5	
8. Resources	5	0	
9. Terrestrial Sensitive Environments	(c)	25	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		75
Resident Population Threat Score			
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		247500
Nearby Population Threat			
Likelihood of Exposure:			
12. Attractiveness/Accessibility	100	5	
13. Area of Contamination	100	20	
14. Likelihood of Exposure	500		5
Waste Characteristics:			
15. Toxicity	(a)	1000	
16. Hazardous Waste Quantity	(a)	1	
17. Waste Characteristics	100		6
Targets:			
18. Nearby Individual	1	1	
19. Population Within 1 Mile	(b)	57	
20. Targets (lines 18 + 19)	(b)		58
Nearby Population Threat Score			
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		1740
Soil Exposure Pathway Score:			
22. Pathway Score[d] (S_s), [lines (11+21)/82,500, subject to max of 100]	100		3.02

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60
[d] Do not round to nearest integer

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TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Release:			
1. Observed Release	550	0	
2. Potential to Release:			
2a. Gas Potential to Release	500	0	
2b. Particulate Potential to Release	500	43	
2c. Potential to Release (higher of lines 2a and 2b)	500	43	
3. Likelihood of Release (higher of lines 1 and 2c)	550		43
Waste Characteristics:			
4. Toxicity/Mobility	(a)	2	
5. Hazardous Waste Quantity	(a)	100	
6. Waste Characteristics	100		3
Targets:			
7. Nearest Individual	50	20	
8. Population:			
8a. Level I Concentrations	(b)	0	
8b. Level II Concentrations	(b)	0	
8c. Potential Contamination	(c)	41	
8d. Population (lines 8a + 8b + 8c)	(b)	41	
9. Resources	5	0	
10. Sensitive Environments:			
10a. Actual Contamination	(c)	0	
10b. Potential Contamination	(c)	25	
10c. Sensitive Environments (lines 10a + 10b)	(c)	25	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)		86
Air Migration Pathway Score:			
12. Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		0.134472727272727

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.
[d] Do not round to nearest integer

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